

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

I. CLAIM STATUS AND AMENDMENTS

Claims 22-59 were pending in this application when last examined.

Claims 22-24, 26-33, 37-43, 47-49, 51 and 52 were rejected.

Claims 25, 34-36, 44-46, 50 and 53-59 were indicated as allowed. Applicants appreciate the Examiner's indication of allowable subject matter in item 5 on the Office Action Summary.

The claims have been revised to better conform to U.S. for antecedent basis. The revisions are editorial in nature and non-substantive. They are not intended to narrow the scope of rejection. No new matter has been added.

New claims 60, 61, 62, and 63 have been added that depend on independent claims 22, 37, 47 and 53, respectively. The new claims further specify that the metal used is yttrium. Support for the new claims can be found in the claims from which they depend and in the disclosure, for example, at page 15, line 19. No new matter has been added.

Claims 22-63 are pending upon entry of this amendment.

The specification has been amended at page 15, lines 9-12, to include a separate brief description for Figures 6a and

6b. Support can be found in the disclosure, for example, at page 24, lines 11-12. No new matter has been added.

II. OATH/DECLARATION

The oath/declaration was objected to for being defective for the reasons set forth on page 2 of the Office Action.

In reply, attached herewith is a corrected oath/declaration that overcomes this objection.

III. OBJECTION TO THE SPECIFICATION

On page 3 of the Office Action, the specification was objected to on the basis that the "Brief Description of the Drawings" section does not separately describe Figures 6a and 6b.

In reply, the present amendment amends the specification to include a brief description for each Figures 6a and 6b. Support can be found in the specification at page 24, lines 11-12. Therefore, the objection is untenable and should be withdrawn.

IV. ANTICIPATION REJECTION

On page 3 of the Office Action, claims 47-49, 51 and 52 were rejected under 35 USC §102(b) as anticipated by JP-A-08164338.

This rejection is respectfully traversed.

Applicants respectfully disagree with this rejection. For further referral, an English translation of JP-A-08164338 is attached herewith.

The present invention, as represented by independent 47, calls for a catalyst comprising a zeolite loaded with palladium and a metal selected from the group consisting of scandium, yttrium, a lanthanide and a combination thereof, said zeolite based on rings having 12 oxygen atoms, wherein the palladium in the zeolite is wholly or partially coordinated as ion by the zeolite.

It is respectfully submitted that JP-A-08164338 fails to disclose each and every element of the claimed invention.

JP-A-08164338 seems to describe a layered catalyst with a molecular sieve adsorbent, Pd as first bed, intermediate rare earth oxide, and Pt or Rh as second bed. See paragraphs 7, 8, 12, and Figure 1 in JP-A-08164338. Accordingly, it appears that this reference describes a kind of system, wherein a molecular sieve is coated with Pd, and the Pd-coated zeolite is then coated with a RE-oxide, and then a Pt or Rh type of coating is provided.

However, this catalyst of the prior art reference is essentially different from the type of catalyst of the present invention, wherein the zeolite is loaded with both Pd and a metal selected from Sc, Y and Ln (Ln is lanthanides) as in the present invention. See independent claim 47, in which the catalyst requires "a zeolite loaded with palladium and a metal selected

from the group consisting of scandium, yttrium, a lanthanide . .
."

Hence, it is clear that JP-A-08164338 does not describe the use of zeolites, which are loaded with the metals as required in the present invention. Consequently, JP-A-08164338 fails to disclose each and every element of the claimed invention. Therefore, JP-A-08164338 cannot anticipate the claimed invention, and the rejection should be withdrawn.

Further, there is no indication that the palladium in the cited reference is present as ion coordinated by the zeolite as required by the claimed invention. See the last line of independent claim 47 that specifies that "palladium in the zeolite is wholly or partially coordinated as ion by the zeolite." For this additional reason, the cited reference fails to disclose or suggest each and every element of the claimed invention.

Lastly, new claim 60 has been added that depends on claim 47. Claim 60 further specifies that the metal selected from Sc, Y and Ln (Ln is lanthanides) is yttrium. It is noted that JP-A-08164338 fails to disclose or suggest the use of yttrium as the metal. It is further noted that yttrium gives especially good/surprising and unexpected results in the present invention. See Example 7 of the instant disclosure. In this regard, it is respectfully submitted that the present invention achieves surprising and unexpected results over JP-A-08164338.

In view of the above, Applicants respectfully submit that the cited reference JP-A-08164338 fails to disclose or suggest each and every element of the invention of independent claim 47. As a result, JP-A-08164338 cannot anticipate the claimed invention. For this reason, the invention of independent claim 47 is novel and unobvious over JP-A-08164338. Likewise, the invention of claims 48-49, 51 and 52 are also novel and unobvious in view of their dependency on claim 47.

Therefore, the above-noted anticipation rejection is untenable and should be withdrawn.

V. OBVIOUSNESS REJECTION

On page 4 of the Office Action, claims 22, 23, 24, 26-33, 37-43, 47-49 and 51-52 were rejected under 35 USC §103(a) as obvious over JP-A-08164338 in view of Applicants' alleged admission in the "Background of the Invention" section on page 1 of the specification.

This rejection is respectfully traversed for the same reasons set forth immediately above and for the following reasons.

First, independent claim 22 calls for a method for the catalytic reduction of NO_x in an NO_x containing gas by contacting said NO_x containing gas with methane in the presence of a catalyst comprising a zeolite loaded with palladium and a metal selected from the group consisting of scandium, yttrium, a

lanthanide and a combination thereof, said zeolite based on rings having 12 oxygen atoms. The zeolyte in the catalyst of the present invention is loaded with palladium and a metal selected from the group consisting of scandium, yttrium, a lanthanide. It is noted that the remaining independent claims, claims 37, 47 and 53 also require this claim element. Yet, as discussed above, JP-A-08164338 fails to disclose or suggest the use of zeolites, which are loaded with the metals as required in the present invention.

Second, as discussed above, there is no indication in JP-A-08164338 that the palladium is present as ion coordinated by the zeolite as required by claim 47.

For these reasons, JP-A-08164338 fails to disclose or suggest each and every element of the present invention.

Third, JP-A-08164338 does not describe the use of methane as required in the claimed invention. Instead, the method in JP-A-08164338 discloses the use of propane. See section 30 of JP-A-08164338. By contrast, claim 22 calls for "contacting said NO_x containing gas with methane in the presence of a catalyst." (Emphasis added.) Applicants respectfully submit that the use of propane is considered to be different from the use of methane. As such, one of ordinary skill in the art would know that the use of propane may lead to completely different effects.

Apparently, the system of JP-A-08164338 works well with propane. In this regard, it is respectfully submitted that propane is not suggestive of methane. This is especially true given the known differences between propane and methane. They are not predictive of each other. As such, it is respectfully submitted that one of ordinary skill in the art, upon reading the cited references and in view of the known differences between propane and methane, would not reasonably expect that methane could be substituted for propane in the method in JP-A-08164338 to successfully arrive at the claimed invention, had he even thought to try methane in the first instance.

Fourth, turning to another difference between the catalyst of the present invention that in the cited prior art, the construction of the catalyst according to JP-A-08164338, as far as it is understandable from the attached English translation thereof, is arranged such that the NO_x purification, a term which is unclear in itself, seems to be governed by CeO₂ and Pt/Rh, but not by Pd, since Pd is barred. See paragraph 33 of JP-A-08164338. Hence, JP-A-08164338 does not disclose a catalyst and a process with this catalyst for NO_x reduction with a catalyst loaded with Pd and a metal selected from Sc, Y and Ln (Ln is lanthanides). Referring to Figure 3 of JP-A-08164338, it seems that the catalyst of JP-A-08164338 could be described as a rare earth oxide protected Pd coated adsorbent particle. Hence, in

JP-A-08164338 it seems that Rh/Pt and CeO₂, and not Pd, are used to treat NO_x.

The Office refers to paragraph 47 of JP-A-08164338, as disclosing that a test with an exhaust gas of an automobile with a V-6 engine is applied. However, it is not unambiguously clear what composition are in this exhaust gas. Thus, it is respectfully submitted that such passage in JP-A-08164338 cannot be considered as enabling disclosure of an exhaust gas with methane. Moreover, it certainly does not disclose or suggest such.

Actually, it is most likely that this disclosure relates to a gasoline engine, wherein the exhaust of methane is highly unlikely. Possibly, it might be the case that this is a gas engine based on LPG. Also, it should be noted that the exhaust of methane is highly unlikely, or in fact absent.

Fifth, turning now to the alleged "admission" in the instant specification, at page 4 of the Action, the Office relied on the "Background of invention" section on page 1 of the instant specification, as allegedly rendering the claimed invention obvious when combined with the teachings in JP-A-08164338.

Applicants respectfully disagree with the Office's characterization of Applicants' disclosure. It is noted that in the context of the present application, the gas engines and combustion processes mentioned therein may relate to those wherein methane is the essential component for the method of the

invention. See, for instance, the definition of methane containing gas in section 18 (and at page 14) and the suggested conditions in sections 33 and 34 (see the specific addition of methane of the US publication), claim 1 (methane as component), and the test conditions (Example 2 on page 25). However, it is respectfully submitted that the section on page 1 of the instant disclosure that was relied upon by the Office in no way discloses or suggests the present invention, especially as it relates to the use of methane in the claimed method.

It should be further noted that the alleged admission in the instant disclosure, also does not remedy the above-noted deficiencies in the primary of JP-A-08164338.

Therefore, since JP-A-08164338 only indicates that NO_x-propane gas mixtures might be treated with a very specific catalyst, it is not obvious for a skilled person that the catalyst of JP-A-08164338 firstly has to be modified to obtain a catalyst loaded with Pd and Sc/Y/La according to the present invention and secondly can also be used for the catalytic reduction of NO_x by methane according to the present invention.

For these reasons, it is respectfully submitted that the cited references fail to disclose or suggest each and every element of the claimed invention. Therefore, claim 22-24, 26-33, 37-43, 47-49 and 51-52 are novel and unobvious over the cited prior art references. Thus, the above-noted 103(a) obviousness

rejection of claims 22, 23, 24, 26-33, 37-43, 47-49 and 51-52 is untenable and should be withdrawn.

Further, it is noted that new claims 60-63 have been added. As discussed above, the new claims depend on the independent claims and further specify that the metal used therein is yttrium. It is respectfully submitted that the cited prior art references fail to disclose or suggest the use of yttrium in the manner proscribed by the present invention.

VI. CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and early notice to that effect is respectfully requested.

If the Examiner has any questions or comments, please contact the undersigned attorney at the telephone number below.

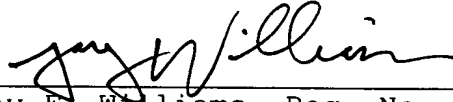
Please charge the fee of \$200 for the four extra claims of any type to our credit card as set forth on the attached Credit Card Payment Form.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following items:

- oath/declaration
- English translation of JP-A-08164338